

DETAILED ACTION

1. Claims 13, 15-25 are pending in the application.
2. Claims 1-12 & 14 have been canceled.

EXAMINER'S AMENDMENT

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with David R. Moorman on 11/11/2009.

The Claims have been amended as follows:

- **Replace Claim 13 with:**

A circuit for reducing the crest factor of a data symbol to be transmitted in a multi-carrier data transmission system, the data symbol being a function of a plurality of signals provided within a predetermined time interval, each of the plurality of signals allocated to a carrier, each carrier occupying at least one frequency from a transmit data spectrum, at least one carrier being reserved which is not provided for data transmission, the circuit comprising:

a transmit path configured to receive the data symbol;

a model path arranged in parallel with a section of the transmit path the model path comprising:

a model filter configured to receive at least periodically the data symbol in non-oversampled format, the non-oversampled data symbol exhibiting a non-flat PSD power spectrum;

an analysis and evaluation circuit arranged following the model filter and configured to determine whether the time domain function of the non-oversampled data symbol, filtered by the model filter and exhibits within a predetermined time interval at least one maximum which exceeds a first threshold, and further configured to determine an associated position of the maximum within the time interval, and, by scaling and displacing a dirac-like sample function, to generate a correction function in dependence on the associated position and an amplitude of the maximum; and

a combining device which is connected to the model path and the transmit path, the combining device configured to subtract the correction function from the non-oversampled data symbol on the transmit path;

wherein the model path further comprises an oversampling device operably coupled to the model filter, and a bypass device configured to selectively bypass the oversampling device.

- **Cancel Claim 14.**
- In Claims 15-17, line(s) 1 **replace:** "...claim 14..." **with** "...claim 13..."
- **Replace Claim 20 with:**

A method for reducing the crest factor of a data symbol to be transmitted using a circuit in a multi-carrier data transmission system, the data symbol being a function of a plurality of signals provided within a predetermined time interval, each of the plurality of signals allocated to a carrier, each carrier occupying at least one frequency from a transmit data spectrum, at least one carrier being reserved which is not provided for the data transmission, the circuit comprising:

- a transmit path configured to receive the data symbol;

- a model path arranged in parallel with a section of the transmit path the model path comprising:

 - a model filter configured to receive the data symbol;

 - an oversampling device operably coupled to an input of the model filter, and a bypass device configured to selectively bypass the oversampling device;

 - an analysis and evaluation circuit arranged following the model filter and configured to determine whether the time domain function of the non-oversampled data symbol, filtered by the model filter and exhibits within a predetermined time interval at least one maximum which exceeds a first threshold, and further configured to determine an associated position of the maximum within the time interval, and, by scaling and displacing a dirac-like sample function, to generate a correction function in dependence on the associated position and an amplitude of the maximum;

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a combining device which is connected to the model path and the transmit path, the combining device configured to subtract the correction function from the non-oversampled data symbol on the transmit path, the method comprising:

oversampling the data symbol two-fold and providing the oversampled data symbol to the model filter when the data symbol is part of an ADSL data transmission; and

providing data symbol in non-oversampled format to the model filter when the data symbol is part of an ADSL+ data transmission.

- **Replace Claim 24 with:**

A method for reducing the crest factor of a data symbol using a circuit in a multi-carrier data transmission system, the data symbol being a function of a plurality of signals provided within a predetermined time interval, each of the plurality of signals allocated to a carrier, each carrier occupying in each case at least one frequency from a transmit data spectrum, at least one carrier being reserved which is not provided for the data transmission, the circuit comprising:

a transmit path configured to receive the data symbol;

a model path arranged in parallel with a section of the transmit path the model path comprising:

a model filter configured to receive the data symbol;

an oversampling device operably coupled to an input of the model filter, and a bypass device configured to selectively bypass the oversampling device;

an analysis and evaluation circuit arranged following the model filter and configured to determine whether the time domain function of the non-oversampled data symbol, filtered by the model filter and exhibits within a predetermined time interval at least one maximum which exceeds a first threshold, and further configured to determine an associated position of the maximum within the time interval, and, by scaling and displacing a dirac-like sample function, to generate a correction function in dependence on the associated position and an amplitude of the maximum;

a combining device which is connected to the model path and the transmit path, the combining device configured to subtract the correction function from the non-oversampled data symbol on the transmit path, the method comprising:

using L-fold oversampling of the data symbol on the model path;

storing, for the model path, only a single sample correction signal for reducing the crest factor; and

deriving a remaining L-1 sample correction signals using cyclic time displacement and scaling in the time domain.

Allowable Subject Matter

4. Claims 13, 15-25 and re-numbered as claims 1-to-12 respectively are allowed.
5. Claims 13, 15-25 and re-numbered as claims 1-to-12 respectively are allowable over the prior art of record because the cited references do not contain the specified limitation of A circuit for reducing the crest factor of a data symbol to be transmitted in a multi-carrier data transmission system, the data symbol being a

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function of a plurality of signals provided within a predetermined time interval, each of the plurality of signals allocated to a carrier, each carrier occupying at least one frequency from a transmit data spectrum, at least one carrier being reserved which is not provided for data transmission, the circuit comprising:

a transmit path configured to receive the data symbol;

a model path arranged in parallel with a section of the transmit path the model path comprising:

a model filter configured to receive at least periodically the data symbol in non-oversampled format, the non-oversampled data symbol exhibiting a non-flat PSD power spectrum;

an analysis and evaluation circuit arranged following the model filter and configured to determine whether the time domain function of the non-oversampled data symbol, filtered by the model filter and exhibits within a predetermined time interval at least one maximum which exceeds a first threshold, and further configured to determine an associated position of the maximum within the time interval, and, by scaling and displacing a dirac-like sample function, to generate a correction function in dependence on the associated position and an amplitude of the maximum; and

a combining device which is connected to the model path and the transmit path, the combining device configured to subtract the correction function from the non-oversampled data symbol on the transmit path;

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wherein the model path further comprises an oversampling device operably coupled to the model filter, and a bypass device configured to selectively bypass the oversampling device.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SUDHANSHU C. PATHAK whose telephone number is (571)272-5509. The examiner can normally be reached on 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on 571-272-3042.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Sudhanshu C Pathak/

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Primary Examiner, Art Unit 2611